

If one can accept the accuracy of a letter of Pedro de Valdivia, 175
which contains what is probably the first "description of the 23/
Araucanians ever penned," the Indians were already good 24/
husbandmen in the mid-sixteenth century. Valdivia referred to
their rich fields, "with wood that drops along the ground," and
to the numerous foods that they "saw for their livelihood, such
as maize, potatoes, quinoa [quinoa?], madi [madi?], pepper, and
beans...."

Even in the days when they were almost incessantly at war 175
with Spaniards or Chilians, the Araucanians derived much of 24/
their sustenance from the soil. Their homeland afforded a few
game animals and a number of wild fowl, but they lived pri-
marily on a vegetarian diet. They ate many wild plants, tubers, [23]
nuts, and fruits, but they also raised crops of corn, wheat, and
potatoes, together with garden products, such as peppers and
onions.¹ Farming was left almost entirely to women, and in- [24]
tensive agriculture was seldom attempted. Land was cleared [25]
and utilized as occasion demanded, but there was no effort to
improve the soil and no great concern over the exact locations
and limits of land holdings.

LAND OWNERSHIP

In the Spanish period small units of kindred, whose precise 423
composition is unknown, claimed rights of possession to the 62/
area they occupied. Apparently, the head of a putative kin
group held some sort of title on behalf of the entire unit and
assigned particular plots for the use of his followers. Ownership
applied only to usufruct, for it seems to have been the rule that
land itself could neither be sold nor alienated. According to
McBride: "It is even doubtful if any fixed practice of inheriting
individual holdings had become established, though probably a
family remained in possession as long as it desired."²

¹ Gibson, 1971, p. 108.

² But it must be remembered that Valdivia sometimes suggested [14]
Chili's customs in order to attract followers.

³ For further information on these topics, consult Leach, 1959, pp.
20-21; Gibson, 1970, II, 268-270; and Macintosh, 1970, pp. 24-25.

⁴ McBride, 1956, p. 239.

the owners of the big estates known as *fundo*.⁹ Some Chilean landowners employ Araucanians by preference because they are willing to work long hours for small pay, will accept poorer food and housing than Chilean workmen demand, and do not often join organized labor movements.

All in all, it can be seen that land ownership has become one of the most vexing problems confronting the Mapuche. It is aggravated by the fact that the soil which was once heavily wooded has been swept bare of its forest cover as more and more trees have been cut down to clear ground for farming, for fuel, and to provide material for houses.¹⁰ Furthermore, the increase of livestock since pacification has led to serious overgrazing, with the result that the heavy rains of winter wash valuable chemicals out of the denuded earth and erode great tracts of precious soil as the waters cut deeply into the bare ground. In addition, the Indians have been cultivating their land much more intensively since the beginning of the reservation period than they ever had done before, without adequate programs of fertilization, crop rotation, or fallowing. It is by no means uncommon to find a native struggling year in and year out to raise two crops of wheat annually on the same piece of ground. It is no wonder that in some cases the soil has become depleted to the point where the returns are scarcely worth the effort of farming.

LAND USE

Several basic changes in land use have taken place in the last few decades. Above all, agriculture has become a major occupation for men,¹¹ and its practice has become intensive rather than semisubsistence. Wheat is the principal crop, both for food and

⁹ Once in a while an ambitious Araucanian who has grown rich will work for a Chilean landlord as a mediator, on a profit-sharing basis, while his children operate his own farm. Such men soon become far wealthier than their neighbors.

¹⁰ Under missionary influence a few Mapuche are compensating for the loss of forest cover by planting groves of eucalyptus or apple trees on their property (*Provincianos*).

¹¹ Women still help during planting and harvesting times, and I have observed women, in families where adult males are lacking, performing such heavy tasks as plowing.

late as 1878; on the mainland well into the present century in small quantities (Bullock, 1911, p. 28). 241

There is no report of manioc or tomatoes being cultivated by any of the *Araucanians*. The sweet potato was cultivated a little in the northern *Picuncu* region, from Quillota north, but not by any of the *Mapuche-Huilliche*, so far as our records go.

Cultivation in open glades or with clearing through burning (Bullock, 1911, pp. 32-33) was the prevalent system. Generally, land was left fallow 1 to 3 or more years after one season's planting (Bullock, 1911, pp. 31-32; Latham, 1936, pp. 292-93). Garden plots were sometimes fenced (Goicueta, 1852, p. 93), more often unfenced. Beans were often planted in the same field with maize, the maize stalks serving as bean poles. Irrigation was used north of the Rio Rapel, but there is no documentary or archeological evidence of its use south thereof (Latham, 1928 a, p. 139), where rainfall was greater and more evenly distributed the year round. No terracing was done south of the Choapa (Latham, 1928 a, p. 135). Manuring was apparently not practiced. 242

The chief gardening implements used to break ground and to loosen and lift the clods were: an ear- or shovel-shaped implement of wood; a wooden three-pronged or tridentlike "pitchfork," sometimes with a perforated stone at the upper end of the handle to weight it (Bascufan, 1863, p. 192); a pole (used in pairs in Chiloé) pointed at one end and rounded at the other, the worker leaning his body weight at chest or stomach on the rounded end. For making holes to sow maize, beans, and potatoes and for digging out potatoes, a pointed wooden implement served as dibble and digging stick. 241

By far the greater part of the gardening labor fell to the women. They did the sowing and weeding. The more strenuous work involved in first breaking ground was done by the men.

Planting and harvesting were done on the communal or *mingaceo* system, at least for maize. A man who wished to break ground and plant maize, invited the members of his community or *parcialidad*, men and women, to come with their implements, on a given day. The men would break the ground, the women following behind them, making holes with their dibbles, putting three or four kernels of maize in each hole, and treading down the earth over the hole. The planting over, all repaired to the man's house for an abundant meal with plenty of *chicha* (Meesbach, 1936, pp. 138-43). A similar procedure—invitation, communal labor, food and drink—was followed in harvesting and threshing wheat, and seemingly in other harvesting. The threshing of the wheat was done by men and women trampling the ears in a quasi-dance and at the same time singing to the music of trumpet, flute, and drum. In more recent time threshing with use of horses came in. 243
476

they began to move backward along the edge of both sides of the tray. While the kernels were thus on the move, the wind removed the chaff. Occasionally the girl halted to throw off ears that turned up, and to stir the kernels with her hands to find more. When chaff and ears had been removed from all, she poured the kernels into a basket and walked back to the ruka to prepare them for the family's midday meal. (Cf. pp. 206-209 for the preparation of them.) Threshing and winnowing took 40 minutes.

Today, every family that has a right to own land in an area raises wheat on one or several pieces of it, either on burnt-over land or in natural glades. These differ in size and shape (pls. 1; 35, 1 and 2). No informant knew how much land he had under cultivation. Pointing out his fields, he might say, "I believe I have about two *dareas* here, and one over there. *Darea* is a word we got from the Chileans, and is used only at harvest time. It is a piece of land, the amount of grain on which approximates what a man can cut by hand in a day. We use it only when hiring a man to help us." A woman listening in interjected, "If one hurries a little, two *dareas* can be cut in one day." "In this area [Collaripa] a *darea* is a piece of land approximately 80 meters square." A Boron man stretched an arm, and noted that from his chest to the tip of his hand approximated a *vara*, and added, "I think a *darea* is 70 by 50 *varas*. In our area, because of the contour of the land, a *darea* is usually longer than it is wide." Fields are not fertilized, but are allowed to lie fallow for one or two years.

Agricultural implements formerly used, according to Gemini, were a wooden pick (*chopel*) made either of *luma* or *temu*, a wooden spade, and perforated stones (*catancura*). (Cf. Gemini, 1944, pp. 315-321 for complete description.) *Catancura* were used in smashing lumps of earth turned up with pick or spade. Although metal hoes and spades have replaced the wooden ones, all three wooden implements were seen during the present study, and were being used in gardening. Fields were being plowed with plows drawn by oxen (pl. 34). There were a few plows with an iron share; all others had wooden shares. Neighbors borrowed plows from each other.

Wheat was the only small grain I saw cultivated. Seeding is done by hand. If a man does not have sufficient seed, another will arrange with him for the amount he needs, in which case the harvest is shared, in accordance with an old custom. In Boron area, "if one man furnishes the land and another the seed, each receives half of the harvest; if each furnishes half the seed, and one the land, each also receives half the harvest." In Collaripa, while I was there, one man furnished

seen that both the area planted and the annual volume of the harvest have increased about 7.5 per cent, while the returns per unit have diminished about 0.5 per cent. According to government statistics for 1950-51, the number of hectares in Cautin Province planted in wheat was 153,765, an estimate which includes Mapuche reservations. Many Chilean farmers see the acquisition of Mapuche-held land as one solution to the problem of production.

Despite serious erosion, the soils are moderately fertile and offer possibilities for increased production, provided organic matter is conserved. Aside from the larger *fundos*, there is little use made of lime phosphate or other fertilizers, even among the Chilean population. Dry farming predominates in the province, although there is some small-scale irrigation on certain *fundos*.

In general, a combination of field and crop rotation is practiced in a simple, if not haphazard, way. Crop rotation usually consists of one planting of wheat in newly plowed fallow land, the preparation of which begins during the third year of rest, followed by a season of oats and a season of potatoes or a leguminous crop. It is frequently the practice to sow oats a short time after the wheat harvest, in the same field, without further preparation of the soil than the necessary plowing and, perhaps, the burning off of wheat stubble. When *chacareria* is used in the rotation, it is customary to employ it at the beginning of the three-year cycle. On many *fundos*, the cycle is initiated with clover or other pasturage. However, it is not uncommon to plant successive crops of wheat in the same fields when the land is scarce. This is not undertaken on *fundos* unless fertilizer is used, but the Mapuche and most *parceleros* do not fertilize their fields and, if they do not rotate either crop or field, they obtain extremely poor harvests.

The short duration of fallow periods and the repeated growing of gramineous cereals, to the near exclusion of other species and of leguminous plants, are especially defective aspects of habitual rotation. Chileans who rent land on a temporary basis or farm *parcelas* with the intention of making a quick profit seek only the immediate benefits of the soil and are heedless of conservation through scientific rotation and fertilization. Although the Mapuche farm in this unsatisfactory manner, their motives are different. Nevertheless, the consequences of inadequate technology are the same and may be seen in the loss of soil fertility, erosion of the topsoil, development of veritable *playas* in the fields, spread of parasitic diseases, and the contingent

[Chacareria includes maize potatoes, beans, peas and other vegetables which may be grown both as field and garden crops.]

A
C
242 decrease in productivity. In turn, of course, the poor output results in higher prices for seeds, flour, and other products.

B
241 The expenditure of labor needed to prepare the soil is not great. No exceptional traction is required, and generally a 20-centimeter depth of pulverization is sufficient. In effect, this means that disc plowing and other operations could be performed adequately with ox traction. The only exception to this occurs near the coast, where there are still large stands of trees.

For cereals, a field might receive from one to three plowings. *Chamre*, especially potatoes, requires more effort; labor is performed with greater care. In red-clay soils, fields are prepared (*barbecho*) in August and September; in loamy soil preparation may take place in October, November, and even December. For the rest of the agricultural work, the season is largely optional, depending on weather conditions.

About 60 per cent of the arable land in Cautín Province is at present planted annually by machine. This indicates a great increase in the use of tractors and seeding equipment among the large landowners and those who depend upon them for the rental of farm equipment.

A
243 Of all crops grown, wheat is the most important and accounts for about three-fourths of the land cultivated annually. Winter wheat predominates over spring wheat in a ratio of 15:1. Winter varieties are planted in April-May and into July. About half the wheat is sown broadcast, and the quantity of seed used fluctuates between a maximum of about 180 kilograms per hectare to a minimum of 120. Returns per hectare vary between 6 and 25 metric quintals (a metric quintal equals 100 kilograms), averaging 10. The Mapuche tend to sow less seed per hectare (between 90 and 100 kilograms) and have sparser harvests.

A
[433] Oats follow wheat in importance, their average yield being about 8 metric quintals per hectare. Barley and rye are also grown, with apparently favorable results in areas not well suited for wheat, but the amount is too small to have an appreciable effect on the trend in farm production.

A
C
[244] Harvesting begins in the first half of January if the fields are dry. Oats are generally harvested first, wheat next along with linseed, and then lentils, peas, and potatoes. The season ends in May. More than 40 per cent of the cereal crop is harvested entirely by machine, the

new and involved skirmishing and preparation for battle. Today, women cultivate gardens and men do field work. The transition to this situation seems to have been entirely dependent upon the cessation of hostilities and accommodation to reservation living.

Present-day Mapuche agricultural technology varies from the highly conservative hoe-and-dibble cultivation of vegetable gardens and small fields to the fullest utilization of modern farm machinery, and from complete lack of soil conservation to adequate rotation of crops, fields, and the application of fertilizer. Between these extremes are a number of agricultural techniques which, taken as a whole, characterize Mapuche farming operations.

In general, a steel plow is used in the preparation of fields, and ox traction prevails almost to the exclusion of horses. Wooden plows (*autos de robo*) are occasionally employed, principally along the coast, if the ground is especially full of rocks and it is feared that the steel plow may be blunted or its tip broken. If the wooden plow breaks, it can be replaced or repaired fairly easily. The cost of repairing or replacing a steel plow is prohibitive, and breaking the steel point is considered a very great misfortune. The single-share plow is one of the most expensive pieces of equipment owned by the Mapuche.

Oxen are said to be preferred to horses for plowing, and the technique of handling plow horses is not generally known. This also holds for Chilean farmers in the region. It is further maintained that oxen provide more traction than horses and greater durability. It is certain that they require less expensive fodder and less care.

Working about eight hours a day with a single team of oxen and a steel plow, a man needs about three days to plow two hectares of land, which is perhaps all or at least half of the field acreage used by many Mapuche in any one year. Fields often receive a second plowing, rarely a third. If a second plowing is made, the pattern is to make furrows which crosscut each other. This is primarily to break up the clods, rather than to hold rain water. A third plowing is usually diagonal to the first two.

If the second or third plowing takes place in the planting season, the seeds may simply be broadcast before the final plowing, provided the *barbecho* has not been prepared too long in advance and the land has remained fairly soft. Otherwise, the field will be plowed prior to broadcasting the seeds and then harrowed just after the sowing. The triangular-type harrow is the most common one in general use, having either wooden or iron-spike teeth. A heavy log roller (*rodón*) may be

McFarren 2-5 (1952-1954) 1961 SG4 Araucanians SG4
Mapuche

30

MAPUCHE SOCIAL STRUCTURE

A GOOD PART OF THE

311 1948, when it The confines of Alongueo was wooded
313 with oak trees (robles) about sixty years ago, and the area farmed
(241) was considerably smaller than it has been for the past generation.
Now trees are scarce and the smaller second growth is continually
being used for firewood. The nearby hills are largely denuded of first
growth. Most of the timber was cleared commercially to meet con-
struction needs much going into the building of Temuco, which was
founded in 1861. Trees continued to be cut by *fundo* owners and per-
(434) sons for sale and for building their homesteads, and even the more
enterprising Mapuche hauled timber to town for sale. The Mapuche
(34) still exploit the remaining heavy growth for the manufacture of char-
coal and cut the small trees for firewood, which they sell to Chileans
in the rural and urban areas. Timber, however, is no longer a local
resource.

Up until 1918 large parts of the region were covered by a thick
growth of *colihue* or bamboo (*Chusquea cummingii*), the slender
canes of which were used in house and fence construction, as well
as for firewood. A blight killed off most of the *colihue* in Cautín
Province. The best stands were rapidly used up as firewood, and land
was thereby cleared for agriculture.

311 The denuded fields in the immediate area of Temuco contrast
(137) sharply with the woodlands described in the first decade of this cen-
(241) tury (cf. Bullock, 1911). Today, slash-and-burn clearing is sporadic
and infrequent, occurring mostly on the substandard land — the hill-
sides or marshy wooded sections along streams and rivers.

In the Roble Huacho region and similar areas of the Central Val-
(533) ley, little land remains uncultivated. Animals are pastured on their
owner's fallow fields or, by agreement, on those of neighbors. Along
(133) the coast, where there is a good deal of uncleared, swampy, or other-
wise unsuitable land for agriculture, large sections of reservations are
(429) not farmed. Here communal grazing areas and woodlands are found.
The general region around the town of Toltén, for example, is quite
similar in appearance to Bullock's earlier description of the Temuco
region 70 or 80 kilometers to the north.

(133) Alongueo, like most other reservations in the Roble Huacho re-
gion, is relatively flat and therefore easily worked and harvested. Soil
(134) erosion, down to the subsoil in many places, is a serious problem
(242) which, however, is not too well recognized as such by the majority
(433) of the residents. The Mapuche are like the Chilean peasants in their
lack of understanding and ability to cope with the situation. There
is a general feeling that modern machinery, better-quality seed, and

Ilifaron E-5 (1952-1954) 1961 SG4 Araucanians SG4
Mapuche

RESERVATION ECONOMY

31

abundant fertilization are the answer to the problem of declining pro-242
duction, but that these means to an increased yield are relatively un-433
attainable. There is little knowledge of contour plowing, the proper 311
application of the right kind of fertilizer, the planting of soil-enrich-
ing legumes as crops to be plowed under or grazed, the significance
of deep plowing in certain soils — in short a general lack of modern
technological know-how — in relation to conserving the remaining
topsoil and revitalizing the fields. Soil is badly leached by heavy
winter rains and much is pulverized and blown away during the dry [34]
summer months. The yield is regularly poor, the ideal return for 493
wheat being unrealistically set at 20:1, the "good" yield, also unreal- 241
istic in view of the technology, set at 10:1, and the actual yield, gener-
ally from 3 to 6:1 — scarcely enough to last until spring. The harvests
vary somewhat from year to year, depending on the amount and con-
centration of rainfall.

As is general in this part of the Central Valley, Alonqueo's pasture 311
land is scarce and of poor quality. Exhausted fields are grazed bare [233]
after the harvest, while they are fallow. The relatively few animals
owned by the residents do not provide enough organic matter to
enrich materially the fields they graze. Caked animal dung from the [241]
corrals is usually spread in small amounts on the chacras or gardens,
but there is not enough for use on the fields.

Of the original twenty-three families on Alonqueo, eleven are no 621
longer represented on the reservation, although several surviving
members of these who live elsewhere retain claims to a share of land
should the reservation be divided. Today, there are 26 households, a [62]
resident population of 133 Mapuche, and 513 hectares under cultiva- [311]
tion. There are 102 horned cattle, 463 sheep, and 15 horses. [231]

At the time of *radicación* much less land was under cultivation and 311
farming was not as intensive as it is today. The entire section south of
the public road, about a third or more of the reservation area (see
Map II), was not then in use, except as a wood reserve and common
grazing ground. All the inhabitants lived north of where the road [361]
now passes through the reservation. Under these conditions, less land
was farmed by a roughly equal number of people, and it is likely that
returns were higher, that much greater use was made of wild plants,
and that more meat was eaten. Higher meat consumption seems re- [262]
lated to the notion of the "good old days" held by many of the older
people.

More intensive farming and lack of soil conservation has resulted [433]

Of a total of 243 hectares, approximately 125 are cultivated, 90 are vega and woodland utilisable as pasturage, and the rest either vega that is too swampy for use or land bordering the newly built railroad spur line which cuts through the *baja* land from the north-northeast. More than half the land is *altura*, but the ratio of vega and woodland to cleared *baja* is about 2:1, leaving less than three-quarters of the total land available for agriculture under present conditions.

There is greater diversity in land types than is found on Alosquen, where most land is *altura* and the vega that exists is suitable for pasturing cattle most of the year. On Llanccaman and in the Tolén region as a whole there is a continual rotation of crops rather than a fallow period of several years. Some Mapuche allow land to rest, but the pattern is to rotate crops rather than fields. Potatoes, oats, and wheat are grown in successive years on *altura*. In the *baja*, potatoes and barley are rotated, sometimes along with peas. Wheat does not grow well in the wet clayey soil of this region. Potatoes used to be the principal crop until about five years ago, when they suffered a blight which was still rampant in 1953-54. Barley is grown in about the same amount as wheat, and farther north and almost directly on the coast, there are several reservations that experimented with linseed some years ago and today raise this crop almost exclusively for market. Crop yields on some reservations in the Pelchue region are higher than in the Roble Huacho region. While returns are not equal to those on better Chilean farms, they approximate the provincial minimum average, that is, they are in the ratio of about 5 or 6:1 and are said to have reached 15:1, which approximates the provincial maximum average.

The Indians on Llanccaman have 93 cattle, 17 horses, and 134 sheep, in addition to pigs, chickens, and some geese. Many more of these animals are held in half-shares than is the case on reservation Alosquen. This is partly because there is more natural pasturage available on Llanccaman, but it is also because the reservation is less wealthy.

A generation ago more cattle used to be raised than now. Before the *radicación*, cattle and sheep were far more important than crops in the native diet, with the exception of potatoes. In those days agricultural production was not as varied as it is today, potatoes being the principal field crop. There was very little wheat, oats, and *chacarría*, and almost no barley grown. Many wild plants were gathered. Some use was made of fish from the Tolén River, but ocean resources were not tapped.

and hire skilled labor to operate it. Another reason is that, by and large, the local Chilean farmers would prefer to see the Mapuche lose rather than improve their land. 311 248

The notion of private ownership of land seems less strongly developed on Llanquaman and some of the other reservations in the Pelehué region than in Roble Huacho. Pelehué Indians had some difficulty estimating the amount of land they farmed, although they knew how much had been "apportioned" to each of the original radicados at the time the reservation was established. They spoke of "having" so-and-so many hectares and "occupying" so-and-so many additional hectares. The latter they had cleared and put under cultivation, but they did not speak of it as their private property in the way the people of the Roble Huacho region did. Inhabitants of Almonque, for example, not only are able to state just how many hectares they "own" themselves, but are also able to give the exact amount in the hands of the other residents. 423

The existence of common land permits individuals to accumulate as many animals as they are able, since there is adequate grazing land by Mapuche standards. Half-sharing in animals (see pp. 58-62 for a clarification of the half-share system) is common in the Pelehué region. There is a shortage of good-quality pasture, but there are no restrictions on using what is available. There is little or no concern with overgrazing, since many low pastures remain green throughout the year. According to Mapuche estimates, a cow or ox needs about five hectares of grazing land, a horse somewhat more than this, and a sheep less. 233 427 333

Reservación Huilcan: Pelehué Region

Huilcan is separated from Llanquaman by a Chilean parcel owned and operated by a family of white farmers. The land of both Llanquaman and Huilcan is approximately of the same quality, being divided among *vega* (swamp), *baña* (lowland), and *altura* (high and relatively dry land). Huilcan has a total of 200 hectares, of which only 75 are under cultivation. More than one-third of the reservation is uncleared land or *vega*, some of which could be cleared, drained, and otherwise improved to support both farming and grazing. Part of the woodland is being exploited by local residents for the manufacture of charcoal, with the approval of the chief. 311 133 314 322

As on Llanquaman and the general region around Tolén, there is greater emphasis on rotation of crops than fields, as compared with 342

the concentration of wheat production and the simple rotation of fields in the Roble Huacho region. Rotation of crops permits more of the land to be farmed each year, natural pasturage rather than fallow fields serving for the herds. Even less wheat is raised on Huilcan than on Lincaman, a feature it has in common with many reservations along the coast. Crop yields are about the same as on Lincaman, and are consistently higher than in the Roble Huacho region, averaging better than 6:1. Nevertheless, owing to the fact that so little land is cleared, scarcely enough crops are harvested to feed the inhabitants throughout the year.

Huilcan was one of the poorest reservations I visited and surely the poorest one on which I lived and worked in 1953. From what I could judge, the hardship began around 1947, at which time most of the land was planted in potatoes. That year there was virtually a total crop failure. People borrowed what they could and ate into reserves such as cattle and sheep. They consumed most or all of their seed, and used up nearly all their pigs and fowl. Some assistance was received from the Caja de Credito, but successive crop failures since 1947 have made credit almost impossible to obtain. It is only recently that the residents have begun to diversify their crops, apparently resigned to the fact that they are not able to cope with the potato blight (even by holding fertility rites). The people regarded a proposed government appropriation of approximately 30,000,000 pesos for all Mapuche in Araucania (1953) as a windfall, but felt that the small share they might receive would be of little lasting help.

Although there is no scarcity of cultivable land, the people despair of freeing themselves from their present state of hardship without government assistance. There is no general agreement as to what the government should do for them short of providing them with the necessities of life. Some residents, including the chief, feel that a large-scale drainage and clearing project should be undertaken with government help -- that is, with government machinery and skilled labor. Many people are also severely critical of the educational system in the government schools, since their children learn merely the fundamentals of reading and writing and spend a good deal of their time singing psalms (Christian religion is part of the curriculum in all government schools). They feel that agricultural courses should be taught, but few of them realize that the government does not have adequately trained personnel for such a program.

For a more detailed picture of the man-land ratio, the amount and

241 In the Llanos region yields are somewhat higher than in the
Central Valley reservations and many along the Pacific coast. A return
of 9:1 is considered poor, 10:1 good, and 15:1 exceptional. Yields
tend to range between 6 and 9:1 over a five-year period. While drain-
age is poor in the bottom lands, where water is held long after the
rainy season, the hillside and sloping fields, where wheat and oats
are grown, suffer from extreme erosion owing to runoff of the heavy
winter rains. Gullies form in the planted fields and a significant
amount of the seed is washed away. There are many bare spots, con-
sequently, when the fields are ready for harvesting. Contour plowing
could do much to prevent this, but the equipment is unavailable to
the Mapuche. Actually, terraces would have to be built in many places,
if the hillside continued to be planted in crops.

311 All the land in the Llanos region was once heavily wooded.
313 There were great stands of timber not over a generation ago. The
area was cleared during a lumber boom which occurred about twenty
years ago, and which contributed to the prosperity of many Mapuche
families in the general region between lakes Villarrica and Calafquén.
Now there are innumerable dead, stripped trunks and stumps which
are hazardous for cattle and vastly impede plowing and harvesting
operations. These trunks and stumps are made into charcoal by a
number of the Mapuche - an industry which is a welcome supple-
ment to agriculture in the wooded areas of Araucanía.

243 Farming in this region is difficult because harvesters and plowing
machines often cannot be used on the rough terrain. A good deal of
the harvest is brought in by hand, although it may be machine-
threshed provided the roads are passable and the people are able to
cart their crops to a central threshing "depot" in town or on a nearby
132 fundo. Winter is generally severe in the area, with snow falling during
the coldest months. In 1955, one of the most severe winters in many
1731 years, at least 80 per cent of the animals on Nahuelpan succumbed to
exposure and starvation.

423 A similarly difficult year in 1948 precipitated the people's request
425 for division. The reservation had been without an effective chief for
1731 several years, and troubled times resulted in numerous quarrels over
1721 matters that might have been resolved by the action of a strong chief.
1710 There were boundary disputes and fights over the condition of fences
and the damage to crops caused by other people's cattle. Trespassing
1731 animals were killed for food during the severe winter that followed
the poor harvest. Some household heads wanted no more of reserva-
[i.e. Reservation M. Nahuelpan - ANALYST]